AMENDMENTS TO THE CLAIMS

This listing of claims will replace all prior versions and listings of claims in the application:

LISTING OF CLAIMS:

Claims 1-10 (Canceled).

11. (CURRENTLY AMENDED) A Raman amplifying device for amplifying signals (S_1, $S_2 \ldots S_n$) with wavelengths λ_{S1}, λ_{S2} … λ_{Sn} comprising an optical path, pump sources ($P_1, P_2 \ldots P_N$) for generating a plurality of Raman pump signals ($\lambda_1, \lambda_2, .. \lambda_N$) for backward pumping and means for coupling (2_1, $2_2, .. 2_N$)) the plurality of Raman pump signals into the optical path, wherein the plurality of optical Raman pump signals are time-division multiplexed by multiplexing controlling means ($4_1, 4_2, \ldots 4_N$) <u>for time-division multiplexing the plurality of optical Raman pump signals such that</u>

~~characterized in that~~ the time-division multiplexing frequency is higher than the minimal corner frequency f_C of the co-propagating pump-to-signal modulation transfer function among the co-propagating pump-to-signal modulation transfer functions that implicate the signals (S_1, $S_2 \ldots S_n$) and the pumps ($P_1, P_2 \ldots P_N$):

$$f_C = MIN_{i,j}\left\{\frac{\alpha_{Pi}}{2\pi\left|\frac{1}{V_{Sj}} - \frac{1}{V_{Pi}}\right|}\right\}$$

where V_{Sj} and V_{Pi} are the group velocities of the signal Sj and the Raman pump signal Pi, α_{Pi} is the attenuation of the fiber at the pump wavelength λ_{Pi}.

12. (CURRENTLY AMENDED) A Raman amplifying device for amplifying signals ($S_1, S_2 \ldots S_n$) according to claim 11

characterized in that the controlling means ~~multiplex~~ multiplexes the pumps in time so that the pumps that give significant gain to a signal Sk and the pumps that do not give significant gain to the signal Sk are alternated in time at a frequency that is higher than the minimal corner frequency f_C of the co-propagating pump-to-signal modulation transfer function among the co-propagating pump-to-signal modulation transfer functions that implicate the signal Sk and the pumps ~~P_N~~ ($P_1, P_2 \ldots P_N$) that give significant gain to Sk:

$$f_C = MIN_i \left\{ \frac{\alpha_{Pi}}{2\pi \left| \frac{1}{V_{Sk}} - \frac{1}{V_{Pi}} \right|} \right\}$$

where V_{Sk} and V_{Pi} are the group velocities of the signal Sk and the Raman pump signal Pi, α_{Pi} is the attenuation of the fiber at the pump wavelength λ_{Pi}.

13. (CURRENTLY AMENDED) Raman amplifying device according to claim 12 characterized in that the controlling means ~~multiplex~~ multiplexes the pumps in time so that the pumps that give significant gain to a signal Sk and the pumps that do not give significant gain to the signal Sk are alternated in time at a frequency that is higher than the maximal corner

frequency f_C of the co-propagating pump-to-signal modulation transfer function among the co-propagating pump-to-signal modulation transfer functions that implicate the signal Sk and the pumps (P_1,P_2...P_N) that give significant gain to Sk:

$$f_C = MAX_i \left\{ \frac{\alpha_{Pi}}{2\pi \left| \frac{1}{V_{Sk}} - \frac{1}{V_{Pi}} \right|} \right\}$$

14. (CURRENTLY AMENDED) Raman amplifying device according to claim 12 characterized in that

the controlling means ~~multiplex~~ multiplexes the pumps in time so that the conditions expressed for Sk are fulfilled for all the signals Sk, k=1 to n.

15. (CURRENTLY AMENDED) Raman amplifying device according to claim 13 characterized in that

the controlling means ~~multiplex~~ multiplexes the pumps in time so that the conditions expressed for Sk are fulfilled for all the signals Sk, k=1 to n.

16. (PREVIOUSLY PRESENTED) A Raman amplifying device according to claim 11 with a fiber wherein this fiber has a reduced corner frequency of the co-propagating modulation transfer functions.

17. (PREVIOUSLY PRESENTED) Method for time multiplexing a plurality of Raman pump signals in a amplifying device for amplifying signals (S_1, $S_2 \ldots S_n$) with wavelengths λ_{S1}, $\lambda_{S2} \ldots \lambda_{Sn}$ comprising an optical path, pump sources ($P_1, P_2 \ldots P_N$) for generating a plurality of Raman pump signals ($\lambda_1, \lambda_2, .. \lambda_N$) for backward pumping and means for coupling (2_1, $2_2, .. 2_N$)) the plurality of Raman pump signals into the optical path, wherein the plurality of optical Raman pump signals are time-division multiplexed by multiplexing controlling means ($4_1, 4_2, \ldots 4_N$) characterized by the step:

multiplexing the pumps in time so that the time-division multiplexing frequency is higher than the minimal corner frequency f_C of the co-propagating pump-to-signal modulation transfer function among the co-propagating pump-to-signal modulation transfer functions that implicate the signals (S_1, $S_2 \ldots S_n$) and the pumps ($P_1, P_2 \ldots P_N$):

$$f_C = MIN_{i,j}\left\{\frac{\alpha_{Pi}}{2\pi\left|\frac{1}{V_{Sj}} - \frac{1}{V_{Pi}}\right|}\right\}$$

where V_{Sj} and V_{Pi} are the group velocities of the signal Sj and the Raman pump signal Pi, α_{Pi} is the attenuation of the fiber at the pump wavelength λ_{Pi}.

18. (PREVIOUSLY PRESENTED) Method according to claim 17 comprising the step:

multiplexing the pumps in time so that none of the noises at wavelength λ_{S1} and λ_{S2} and $\ldots$ λ_{Sn} that co-propagates with the pump experiences high variations of gain in time.